

**FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION  
WATERFOWL PERMIT PROGRAM  
2015-2016 ANNUAL REPORT**

**EXECUTIVE SUMMARY**

Florida provides temporary refuge to more than 20 species of migratory waterfowl each year. Four species of ducks (mottled ducks, wood ducks, black-bellied and fulvous whistling ducks) regularly nest in the State during spring and summer. Waterfowl provide significant economic and recreational benefits to the citizens of Florida. This report documents efforts by the Florida Fish and Wildlife Conservation Commission (FWC) to manage Florida's waterfowl during Fiscal Year (FY) 2015-2016.

Waterfowl management activities fall into two categories: population monitoring and habitat management. FWC's Waterfowl and Small Game Management Program (WSGMP) coordinated the banding of 217 mottled ducks, 409 wood ducks and 49 black-bellied whistling ducks during 2015. All species of ducks were captured at trap sites, by night-lighting or by use of a pneumatic cannon net. Reports of band encounters allow FWC to measure hunting pressure on these ducks. Hunters can dial 1-800-327-BAND (inscribed on the band) or visit [www.reportband.gov](http://www.reportband.gov) to report band information.

A main concern for mottled duck conservation is hybridization between introduced domestic mallards and mottled ducks. The mixing of mottled duck and mallard genes could lead to the loss of Florida's mottled duck as a distinct species. WSGMP continued to devote time and resources to this issue in FY 2015-2016.

Providing appropriate waterfowl hunting opportunities for Florida's citizens is a primary mission of WSGMP. Hunting seasons are established in Florida to maximize hunter opportunity within the constraints of sound resource stewardship and guidelines mandated by the U.S. Fish and Wildlife Service (USFWS). WSGMP participated in the national process for setting waterfowl hunting regulations and developed recommendations for the FWC Commission to consider concerning appropriate regulations in Florida.

Habitat management allows FWC to improve the habitat quality and quantity necessary to support Florida's waterfowl and other wetland wildlife. Waterfowl biologists provided technical assistance on wetland conservation and management issues around the State throughout FY 2015-2016. FWC worked with many agencies, organizations, and private landowners to cooperatively manage wetlands.

## INTRODUCTION

Waterfowl are among the most recognized and economically important wild animals in North America. In Florida, hunters, naturalists, and bird watchers spend countless hours enjoying these birds. As human impact on the environment has increased, impacts on waterfowl populations also have increased. WSGMP is charged with ensuring the continued well-being of these popular birds for the sustained use and enjoyment of Florida's citizens.

The passage of the Florida Duck Stamp Act in 1979, which resulted from sportsmen's support and efforts, created the FWC Waterfowl Management Program (agency restructuring combined the Waterfowl Management and Small Game Management Programs into the current WSGMP) and provided a mechanism for funding. This act requires that all Florida waterfowl hunters purchase a waterfowl permit. The fee for a waterfowl permit is \$5.00 for both resident and nonresident waterfowl hunters. The law stipulates that revenue generated from the sale of waterfowl permits or the pro rata portion of any license that includes waterfowl hunting privileges, shall be used for the conservation, research, and management of waterfowl or to promote the cultural heritage of hunting. The law also allows FWC to expend up to 10% of permit revenues to promote hunting and sport fishing activities with an emphasis on youth participation.

During FY 2015-2016, 12,434 waterfowl permits (including 131 five-year permits) were sold. Sportsman's licenses also include a waterfowl permit, and 65,159 of these licenses were sold. Revenue from waterfowl permits and sportsman's licenses totaled \$238,780, of which \$7,214 was set aside to promote youth hunting programs in Florida (e.g. Beau Turner Youth Conservation Center, Florida Youth Hunting Program, Ocala Youth Conservation Camp). The remaining permit revenue (\$231,566) and additional revenue from the State Game Trust Fund (primarily from license fees) supported the \$585,684 that was expended on the conservation, research, and management of waterfowl during the fiscal year.

During FY 2015-2016, WSGMP continued its efforts to increase public awareness of Florida's waterfowl resources through the agency's website ([www.MyFWC.com/duck](http://www.MyFWC.com/duck)). The website provides information on Florida's resident and migrant waterfowl, habitat conservation, and waterfowl hunting, as well as links to other sites of interest to waterfowl enthusiasts.

WSGMP worked cooperatively during the year with several important stakeholder groups, including Ducks Unlimited (DU) and United Waterfowlers of Florida (UWF). WSGMP activities with these groups included coordinating cooperative projects and providing technical assistance on issues of mutual interest.

The Waterfowl Management Strategic Plan, approved for implementation by the FWC Commissioners on February 6, 2008, continues to guide waterfowl management efforts (<http://www.myfwc.com/media/3073237/waterfowl-strategic-plan.pdf>). The plan has three goals: (1) conservation and enhancement of resident waterfowl populations and habitats, (2) leadership in the conservation and enhancement of continental waterfowl populations and habitats, and (3) recreational use and public support resulting in the

enhancement and conservation of waterfowl populations and habitat.

Florida wetlands support breeding (i.e., resident) and migrant (i.e., wintering) waterfowl, and FWC management targets the populations and habitats of these birds, which are discussed below.

## **POPULATION MONITORING AND HABITAT MANAGEMENT**

Population monitoring allows the agency to track the number and species of ducks present in the State over time. Annual population estimates and other population parameters help in managing maximum hunting opportunity while sustaining healthy waterfowl populations. Accurate population information provides a basis for directing waterfowl conservation efforts where they are most needed and effective.

Habitat management helps to provide the greatest quantity and highest quality habitat possible to support Florida's waterfowl and other wetland-dependent wildlife. Without a large habitat base that includes breeding, migration, and wintering areas, waterfowl populations will decline. Habitat management and conservation have importance beyond their value to waterfowl because wetlands benefit many other plant and wildlife species.

Two external programs enhance FWC's ability to conserve and manage wetland habitat for both resident and migratory waterfowl. DU provides matching money to help states acquire and enhance wetland habitat. FWC's matching funds for these projects in Florida are budgeted through the Legislature. Since this program's inception, FWC's projects completed by partnering with DU have helped restore and enhance more than 16,000 acres of wetland habitat in Florida. Florida is part of the Atlantic Coast Joint Venture (ACJV) of the North American Waterfowl Management Plan. Joint ventures create partnerships to plan, fund, and implement habitat projects within their respective geographic areas. The ACJV is one of 14 habitat joint venture partnerships in the United States. The ACJV brings together public and private agencies, conservation groups, and other partners focused on the conservation of habitat for native birds in the Atlantic Flyway of the United States from Maine south to Puerto Rico. WSGMP provides input on ACJV activities in Florida, which provides substantial benefits to Florida's fish and wildlife resources.

## **RESIDENT SPECIES**

The four species of ducks that regularly breed in Florida are the mottled duck, wood duck, fulvous whistling duck, and black-bellied whistling duck. All four species nest during spring and summer. Mottled ducks remain in Florida throughout the year. Many wood ducks, fulvous whistling ducks, and black-bellied whistling ducks remain year-round as well, but some of these birds migrate from Florida for only part of the year.

### **Florida's Mottled Duck**

Current management for mottled ducks is guided by FWC's, "A Conservation Plan for the Florida Mottled Duck" (<http://www.myfwc.com/media/3073234/modu-conservation-plan.pdf>). The Conservation Plan was revised and approved in 2011 to focus on the long-

term (20+ years) management of mottled ducks. A companion Action Plan guides short-term (5 years) management and prioritizes tasks based on immediate conservation needs, funding for research and implementation, and importance relative to competing objectives of the WSGMP. The Conservation Plan serves as a long-term, general roadmap to Florida mottled duck conservation, while the Action Plan will provide details of the routes taken to achieve the goal.

The Florida mottled duck is one of approximately 25 closely-related, mallard-type species worldwide. This subspecies (*Anas fulvigula fulvigula*) occurs only in Florida and does not migrate from the State; therefore, management and protection of this bird are primarily the responsibilities of the State of Florida. The Florida mottled duck is sought by hunters because of its large size and desirable flavor. (Florida hunters harvested an estimated 6,378 mottled ducks during the 2014-2015 hunting season, which accounted for approximately 3% of the statewide harvest of ducks, ranking them seventh in Florida's overall harvest.) FWC remains concerned about the long-term status of Florida's mottled duck population throughout its range because low reproduction and survival have been documented, important habitat in Florida continues to be altered or lost, and hybridization with feral mallard ducks continues. Because of these concerns, the conservative daily bag limit for the harvest of this species remains at one.

Mottled Duck Population Monitoring and Management – Annual mottled duck population monitoring includes banding and a March aerial survey of the breeding population. During the summer of 2015, 217 mottled ducks were captured and marked with leg bands. Over the past ten years, 6,211 mottled ducks have been banded (Figure 1). Periodically, staff analyzes band recovery data to estimate annual survival rates and the proportion of the population that is harvested, as well as to monitor movements.

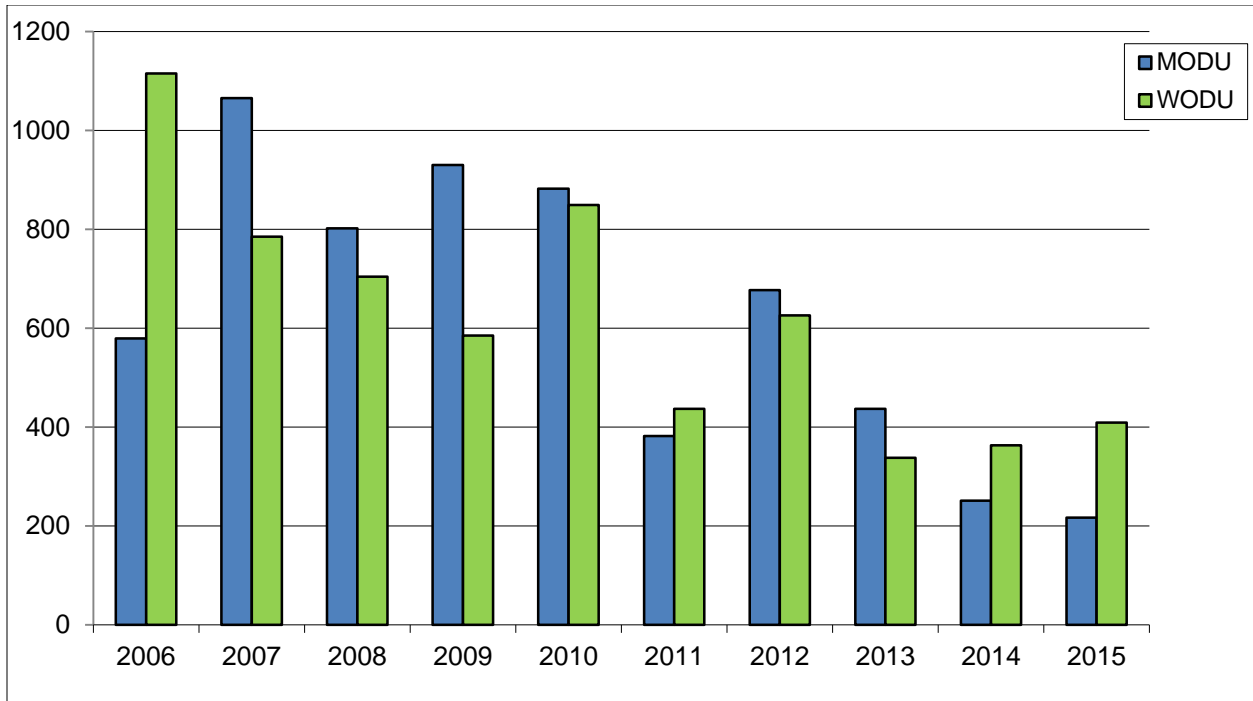


Figure 1. Number of Florida mottled ducks (MODU) and wood ducks (WODU) banded statewide by FWC staff, 2006-2015.

The March breeding population survey has been conducted since 1985; from 2003-2009, FWC waterfowl biologists evaluated a new point-transect survey method to obtain population estimates. Survey results indicated the mottled duck population continued to be relatively stable; however, the proportion of mottled duck/mallard hybrids in the population is unknown. Without this key piece of information, population estimates will continue to be suspect, as changes in status or trends may be masked or even driven by hybrids. From 2003-2009, using existing resources and partner funding from USFWS, FWC was able to fund the population survey, but was unable to fund additional work to develop techniques to identify hybrids. A shift in priorities was needed so staff could focus on and fund efforts to develop techniques to identify hybrids and to assess the proportion and distribution of hybrids in the population. Therefore, from 2010-2016, the annual survey was discontinued so funds could be used for hybridization work. Given limited funding and the time it may take to adequately assess the proportion of genetically pure birds in the mottled duck population, it may be several more years before a population survey is again conducted. Discussions about funding of mottled duck monitoring and conservation efforts with entities concerned with the conservation of the Florida mottled duck (such as the USFWS and DU) remain a priority during the next fiscal year.

Mottled Duck Conservation – FWC’s plan for addressing the mottled duck/mallard hybridization problem has three objectives: (1) develop genetic and plumage-based techniques to identify pure mottled ducks (dichotomous keys), (2) assess the proportion and distribution of hybrids in the mottled duck population, and (3) identify and implement mechanisms to minimize the infusion through cross-breeding of mallard genes (introgression) into the mottled duck population.

Efforts from previous year's development and validation of field keys that effectively differentiate mottled ducks from mallards and their hybrids have been completed. Field keys were finalized and results of this work have been published in the Wildlife Society Bulletin (Table 2). A pilot study was conducted during FY 2015-2016 testing the protocols and methodologies for the assessment of the proportion and distribution of hybrids in the mottled duck population. The assessment involves using the newly developed keys to assess a sample of ducks from throughout the range of the Florida mottled duck. Capturing the necessary number of ducks to inspect plumage in-hand is not feasible; therefore, staff developed a remote method of inspecting the necessary feather groups on individual ducks. Using a digital camera, and super telephoto lens equipped with a laser scaling device, staff take multiple high-resolution images of each duck sampled, and examine and measure various plumage traits necessary for proper species identification. Sampling in this manner throughout the mottled duck range will allow FWC to determine the proportion of mottled ducks, mallards, and hybrids that make up what is referred to as the brown duck population in Florida. In turn, these data will allow FWC to correct future mottled duck survey data for the presence of mallards and hybrids and defining areas or zones of moderate to high hybridization. The later information is important if FWC is to institute meaningful conservation actions to minimize mallard genetic introgression. The full-scale mottled duck population assessment is scheduled to begin in November 2016.

An important part of the strategy for reducing hybridization is to educate and communicate with the public about the problem. The agency's efforts focus on maximizing public awareness of the issue. Strategies include reducing the sale and subsequent release of mallards and creating an awareness of the problem among stakeholders. In FY 2014-2015, staff continued to develop and distribute informational material, contact and make presentations to groups and organizations, and coordinate media coverage. Staff continued to work with FWC's Division of Law Enforcement to remind businesses selling ducks (e.g., feed stores, auctions) about mallard possession and sale regulations.

## **Wood Duck**

Wood ducks are perhaps the most colorful duck in North America and are admired by people throughout the State. The most abundant resident duck species in Florida, wood ducks also are highly valued by Florida hunters. (Wood ducks ranked fourth in hunters' bags and made up approximately 6.9% of the total duck harvest in Florida in 2014-2015. The USFWS estimated 13,221 wood ducks were harvested in Florida during the 2014-2015 regular duck hunting season.)

Wood Duck Population Management -- Wood ducks inhabit wooded, brushy, or other vegetated wetland areas. Unlike other duck species, wood ducks cannot be counted reliably during aerial surveys. Consequently, populations have been monitored through banding, experimental monitoring of nest boxes, and harvest surveys. These efforts have been critical to continuing the special September duck season for Florida's hunters.

In 2015, WSGMP coordinated the banding of 409 wood ducks prior to the hunting season. Over the past 10 years, 6,222 wood ducks have been banded (Figure 1). Previous analysis of banding data indicated that a high proportion of wood ducks banded during the

summer in Florida are harvested by hunters within the State. This information supports increased opportunity for hunting Florida's wood ducks during the September duck season.

Estimates of hunter effort and harvest are used to help determine whether the extra harvest allowed by the special September duck season in Florida is compatible with the well-being of Florida's wood duck population. (Hunters harvested an estimated 2,600 wood ducks and 11,000 blue-winged teal in Florida during this special season in 2014.) There is no evidence to suggest the September season negatively affects wood duck populations.

Wood Duck Habitat Management -- Wood ducks nest in cavities in trees. Many areas with adequate brood-rearing habitat do not contain trees large enough to have suitable nesting cavities. Fortunately, man-made nest boxes can provide nest sites. FWC staff maintained nest boxes existing on Wildlife Management Areas (WMAs) and other public water bodies. WSGMP personnel provided technical assistance to private citizens, government agencies, and groups such as local DU chapters and Boy Scout troops to erect and maintain nest boxes.

### **Fulvous and Black-bellied Whistling Ducks**

Whistling ducks are more closely related to geese than to ducks. Fulvous whistling ducks have separate populations in Asia, Africa, Madagascar, South America, and North America. Until about 40 years ago, neither fulvous whistling ducks nor black-bellied whistling ducks nested in Florida. Today, nesting fulvous whistling ducks are abundant in South Florida, primarily in habitat provided by rice and other flooded agricultural areas, which provides desirable water and nesting cover (habitat). In winter, many fly south, probably to Cuba.

Florida's black-bellied whistling duck population has increased dramatically in recent years, with reports of successful breeding throughout the State. The WSGMP is currently working with other southeastern states to band these ducks using color-marked leg bands, in the hopes that citizens will report their observations. FWC hopes to obtain basic demographic knowledge and movement patterns from the information gathered from this banding project. During FY 2015-16, WSGMP biologists banded 49 black-bellied whistling ducks and fitted them with color-marked leg bands. Two South Carolina marked black-bellied whistling ducks were harvested in Florida during the hunting season. Additionally, several were seen across the State, and a Georgia marked bird was sighted for the first time in Florida.

### **MIGRATORY WATERFOWL**

This large group includes waterfowl that breed in northern North America and migrate to Florida during the fall and winter. Approximately 20 species of waterfowl regularly spend the winter in Florida, and migratory ducks constitute the majority of all waterfowl harvested by Florida hunters. Due to new federal reporting timelines, estimates for the total number of ducks taken during the 2015-2016 seasons were not available at the time of this report.

Habitat in wintering areas, such as Florida, is important in the annual cycle of migratory waterfowl. Habitat conditions during this non-breeding period influence survival

and subsequent reproduction. Ducks must maintain or improve their body condition during winter to avoid mortality during the spring migration and to meet the physiological demands of the nesting season (i.e., egg laying, incubation). WSGMP devotes considerable resources to monitoring and managing these migrant birds and providing quality habitat.

### **Migratory Waterfowl Population Management**

Ring-necked ducks are particularly important in Florida because they constitute a large proportion of the State's annual waterfowl harvest. A majority of the ring-necked ducks in the Atlantic Flyway spend the winter in Florida, and, on average, approximately 60% of ring-necked ducks harvested in the Flyway are harvested in the State. WSGMP provides funding for cooperative banding efforts in Canada, the primary breeding area for this species, and remains vigilant in encouraging Canadian waterfowl managers to continue banding ring-necked ducks on breeding grounds. These efforts are important for providing continued harvest opportunities for this species.

Providing appropriate waterfowl hunting opportunities for Florida's citizens is a primary mission of WSGMP. Hunting seasons are established in Florida to maximize hunter opportunity within the constraints of sound resource stewardship and guidelines mandated by USFWS. WSGMP develops recommendations for the FWC Commission concerning appropriate waterfowl hunting regulations in Florida. During FY 2013-2014, staff worked in conjunction with other state and federal waterfowl biologists to increase teal harvest opportunities based on a February 2013 assessment of the harvest potential for teal which showed that harvest rates could be much higher. In response, the Atlantic Flyway Council proposed initiation of an experimental September teal season in Florida, Tennessee, and Kentucky, to be held in association with existing September wood duck and teal seasons. Four additional days of teal-only hunting were offered to Florida's hunters immediately following the special September wood duck and teal season. This additional hunting opportunity will occur for the next two hunting seasons, culminating in 2017. At that time an evaluation will be performed to demonstrate that the additional teal-only days do not have a significant impact on non-target bird species. Continuation of the extra teal-only days will be considered following the completion of the evaluation.

### **Migratory Waterfowl Habitat Management**

Florida lost approximately 260,000 acres of freshwater, emergent wetlands between 1985 and 1996, and additional losses were observed between 2004 and 2009. This habitat type is essential for waterfowl, yet losses continue, primarily due to urbanization and agricultural expansion. Waterfowl management staff provides technical assistance for managing, restoring, and enhancing waterfowl habitat to various agencies, groups, and individuals (Table 1). Not all technical assistance produces a tangible increase in waterfowl habitat, but this input does cause the welfare of wetlands and associated wildlife to be considered when resource management decisions are made.

FWC continued to work with several entities and private landowners during FY 2015-2016 to evaluate numerous wetland projects and provide technical assistance. Entities included the Natural Resource Conservation Service's Wetlands Reserve Program, the ACJV, Florida's Water Management Districts (WMDs), the USFWS, and numerous local and county governmental entities (Table 1).



Since 2010, WSGMP has partnered with UWF to host an annual Waterfowl Summit. The purpose of the meeting is to provide a forum for networking among agency staff, professionals, sportsmen, and other stakeholders. Invited speakers present the most current information on watershed and wetland science, updates on wetland restoration projects, and creative solutions that fit industry, agriculture, and the priorities of sportsmen and other stakeholders. It is hoped the Waterfowl Summit will identify new wetland restoration funding ideas and partnerships through discussion and awareness.

T. M. Goodwin Waterfowl Management Area -- This 6,270-acre area in the upper St. Johns River Basin continues to be intensively managed by staff for waterfowl, providing important habitat for migrating, wintering, and resident waterfowl and other wetland-dependent wildlife. The area is comprised of two management units: T. M. Goodwin (Goodwin) and Broadmoor Marsh (Broadmoor).

Prescribed fire, disking, roller chopping, and herbicide application are used on the area to maintain vegetation in an early succession stage (i.e., grasses and herbaceous plants), control noxious and exotic vegetation, or reduce the height of existing vegetation to create a greater mixture of open water and vegetative cover after flooding. Water level manipulation, in conjunction with disturbance practices, supplies resident and migratory waterfowl with suitable habitat.

Waterfowl use of the impoundments is substantial and waterfowl hunting is in high demand on the area. Utilizing onsite check stations, it was documented that a total of 1,822 hunters bagged 4,201 ducks (an average of 2.3 ducks per hunter) during the 2015-2016 waterfowl season. In addition to the regular season, special Youth Waterfowl Hunts were held, February 6<sup>th</sup> and 7<sup>th</sup>. These hunts included a variety of events targeted for youth hunters including overnight camping, hunter safety instruction, and meals provided by the South Brevard Chapter of DU and UWF. A total of 27 youth harvested 46 ducks during these hunts. Snipe hunting is also permitted on the area, and 32 hunters bagged 55 snipe (an average of 1.7 snipe per hunter) during the 2015-2016 season. Other public use activities included observing waterfowl and other birds, biking, hiking, and fishing.

## **PROGRAM DIRECTION AND NEEDS**

WSGMP has been in existence for more than 30 years. During this time, substantial contributions have been made to the knowledge and habitat base needed to manage and sustain waterfowl in Florida and internationally. Population monitoring efforts yield information necessary for management. Informing the public and the scientific community is an important part of the efforts to ensure the well-being of the waterfowl resource (Table 2).

The challenge for the future is to continue population monitoring and management, while using up-to-date information to increase involvement in habitat issues. The biggest opportunity to reduce the hybridization threat to mottled ducks by feral mallards is through public education and communication about the issue. Efforts to conserve and manage mottled duck habitat are limited due to the need for additional scientific information on which to base sound recommendations. Coordinating activities between

WSGMP and other entities involved in habitat and conservation issues will remain a challenge. Continued funding of cooperative habitat projects with DU programs remains vital. FWC continues to seek funding from external grants and other sources to expand productivity.

Table 1. Entities that received technical assistance from waterfowl personnel during FY 2015-2016.

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**Florida State Agencies**

South Florida Water Management District  
Suwannee River Water Management District  
Southwest Florida Water Management District  
St. Johns River Water Management District  
Florida Department of Management Services

**Other State or Provincial Agencies**

Ontario Ministry of Natural resources

**Federal Agencies**

U.S. Department of Agriculture--Wildlife Services  
U.S. Fish and Wildlife Service  
U.S. Park Service--Gulf Island National Seashore  
U.S. Geological Survey  
U.S. Army Corps of Engineers  
National Aeronautics and Space Administration

**Local Government**

Highlands County

**Universities**

University of California, Davis, Museum of Fish & Wildlife Biology  
Wright State University  
Southern Illinois University, Cooperative Wildlife Research Lab  
University of Georgia, Warnell School of Forestry and Natural Resources

**Non-governmental Organizations**

Ducks Unlimited Inc., national, state chapter, and various local chapters  
United Waterfowlers – Florida, Inc.  
North American Wetlands Conservation Council  
Atlantic Coast Joint Venture  
Black Duck Joint Venture  
Audubon

**Businesses**

Dixie Plantation (Madison County)

**Florida Citizens**

numerous

Table 2. List of selected waterfowl management reports and publications during FY 2015-2016.

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Bielefeld, R. R., A. Engilis, Jr., J. C. Feddersen, J. M. Eadie, M. D. Tringalli, R. J. Benedict, Jr. 2016. Is it a Mottled Duck? The Key is in the Feathers. Wildlife Society Bulletin. In Press.

Roberts, D. and J. Blush. 2016. 2015 Annual Report for the T. M. Goodwin Waterfowl Management Area. Unpublished report. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida, USA.